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Chefe (ICCV 92318) – A New Kabuli Chickpea Variety for Ethiopia

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Ethiopia is the largest chickpea growing country in Africa, with a share of about 37% in area and 48% in production. During 2003/2004, Ethiopia produced 195,800 t of chickpea from an area of 176,554 ha (FAOSTAT 2004). There has been an increase of about

10% in the area and 42% in the production of chickpea during the past decade (1994/95 to 2003/04). Most of the chickpea production is used for domestic consumption. However, there has been a substantial export of chickpea by Ethiopia during the past five years, with the highest of 48,549 t (valued at US\$14.7 million) during 2002 (FAOSTAT 2004).

The Debre Zeit Agricultural Research Center (DZARC) is the premier institute for chickpea research in Ethiopia. It has collaborated with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India, and the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, in chickpea improvement and released eight chickpea varieties in Ethiopia. Of these, three (*DZ 10-4*, *DZ 10-11*, and *Dubie*) were developed from its own breeding materials, four (*Mariye*, *Worku*, *Akaki* and *Shasho*) from the breeding materials supplied by ICRISAT, and one (*Arerti*) from the breeding materials supplied by ICARDA. Three of these varieties (*DZ 10-4*, *Shasho* and *Arerti*) are *kabuli* type and the remaining are *desi* type.

The Ethiopian chickpea production is predominated by *desi* chickpea (about 95%). However, in recent years, there has been an increase in the interest of farmers in growing large-seeded *kabuli* varieties due to their higher price in the market. The market price for one ton *kabuli* chickpea currently varies from 3000 to 4000 Birr (US\$344 to 459) depending on the seed size, while the *desi* chickpea is sold at about 2000 Birr (US\$230). The first *kabuli* chickpea variety released in Ethiopia (year 1974) was *DZ 10-4* with a very small seed size (10–11 g 100 seed⁻¹) and is now almost out of cultivation. The

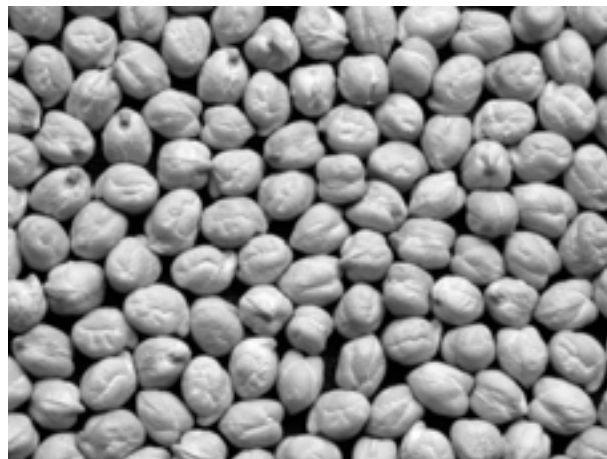


Figure 1. Seed of kabuli chickpea variety Chefe.

Table 1. Mean seed yield (kg ha⁻¹) of chickpea variety (ICCV 92318) as compared to standard check (Arerti) and local check (DZ-10-4) across locations and over years.

| Variety | Location | | | | | | | | | Mean |
|----------------------|----------|------------|-------|-------------|---------|------|---------|------|-------------|------|
| | Minjar | Debre Zeit | Akaki | Chefe Donsa | Enewari | Adet | Sirinka | Ambo | Arsi Negale | |
| 1999/2000 | | | | | | | | | | |
| ICCV 92318 | 1231 | 3274 | 4778 | 3129 | 1879 | 2515 | 3117 | - | - | 2784 |
| Arerti | 1728 | 3844 | 4608 | 3091 | 1669 | 3867 | 1989 | - | - | 2971 |
| DZ 10-4 | 501 | 2057 | 3892 | 2614 | 1790 | 3338 | 1519 | - | - | 2244 |
| 2000/2001 | | | | | | | | | | |
| ICCV 92318 | 2739 | 3513 | 3861 | 3542 | 2794 | 1543 | - | 2010 | - | 2858 |
| Arerti | 3804 | 3730 | 4054 | 4321 | 3320 | 1426 | - | 2915 | - | 3367 |
| DZ 10-4 | 3173 | 3997 | 2913 | 3524 | 2580 | 1455 | - | 1469 | - | 2730 |
| 2001/2002 | | | | | | | | | | |
| ICCV 92318 | 1247 | 1493 | 2749 | - | - | - | - | - | 2499 | 1997 |
| Arerti | 1397 | 1791 | 2953 | - | - | - | - | - | 2875 | 2254 |
| DZ 10-4 | 1066 | 1069 | 1329 | - | - | - | - | - | 1754 | 1305 |
| Over all mean | | | | | | | | | | |
| ICCV 92318 | 1594 | 2760 | 3798 | 3336 | 2337 | 2029 | 3117 | 2010 | 2499 | 2546 |
| Arerti | 2310 | 3122 | 3872 | 3706 | 2495 | 2647 | 1989 | 2915 | 2875 | 2864 |
| DZ 10-4 | 1580 | 2374 | | 3069 | 2185 | 2397 | 1519 | 1469 | 1754 | 2093 |

other two kabuli varieties, Arerti and Shasho, with medium (26 g 100-seed⁻¹) and large seeds (30 g 100-seed⁻¹), respectively were released in 1999.

ICCV 92318, a breeding line developed from a 3-way cross (ICCV 2 x Surutato) x ICC 7344 at ICRISAT, Patancheru, was received by DZARC from ICRISAT along with many other advanced breeding lines. After preliminary yield evaluation at the station, it was selected for multilocation evaluation along with the controls *DZ 10-4* (local check) and *Arerti* (standard check). The trials were conducted at seven locations each during 1999/2000 and 2000/2001 and at four locations during 2001/2002. The overall average yield of ICCV 92318 was 2546 kg ha⁻¹ against 2864 kg ha⁻¹ for the standard check *Arerti* and 2093 kg ha⁻¹ for the local check *DZ 10-4* (Table 1). Though ICCV 92318 was not superior to *Arerti* in yield, it was selected for release primarily because of its attractive and larger (35 g 100-seed⁻¹) seeds (Fig. 1) as compared to *Arerti* (26 g 100-seed⁻¹) and high resistance to fusarium wilt. It was released as “Chefe” in 2004 by the National Variety Release Committee. Chefe is one of the research stations of DZARC where chickpea productivity is always very high.

A high preference by farmers was observed for the new variety *Chefe* during on-farm trials because of its large pods. We presume that the increased price in the international market for the large-seeded *kabuli* varieties will help in faster adoption of the variety. Also there is a large market for chickpea immature fresh seeds, for human consumption in Ethiopia and large-seeded varieties are preferred for this purpose. Thus, the new variety also has potential for this local market. Ethiopian Seed Enterprise and private commercial farmers are multiplying this variety for further distribution as seed and also for export.

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